Groundwater Update

Brookhaven National Laboratory

Progress Update on Western South Boundary Treatment System and North Street East Ethylene Dibromide (EDB)

Regulatory Agency DRAFT 6/4/19

Draft Presentation to Community Advisory Council
June 13, 2019

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Agenda

- Update on Western South Boundary Groundwater Treatment System Modification
- North Street East Ethylene Dibromide (EDB)
 - Plume monitoring update
 - Groundwater Modeling Results
 - Path Forward

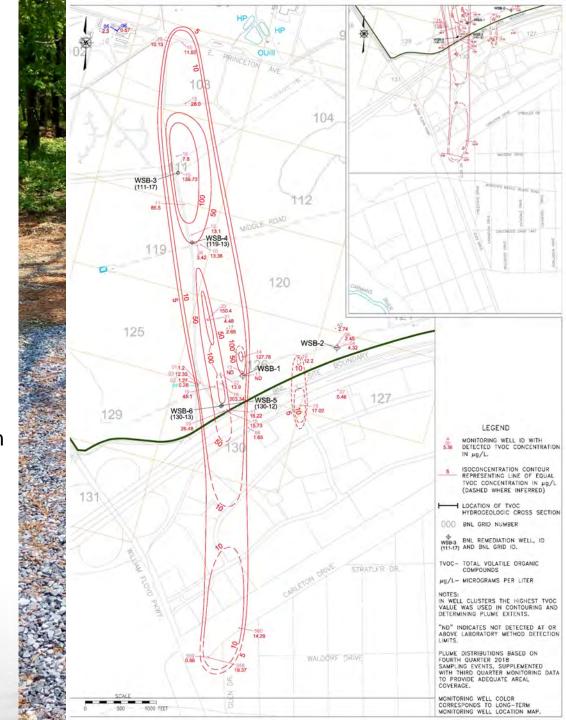






OU III Western South Boundary

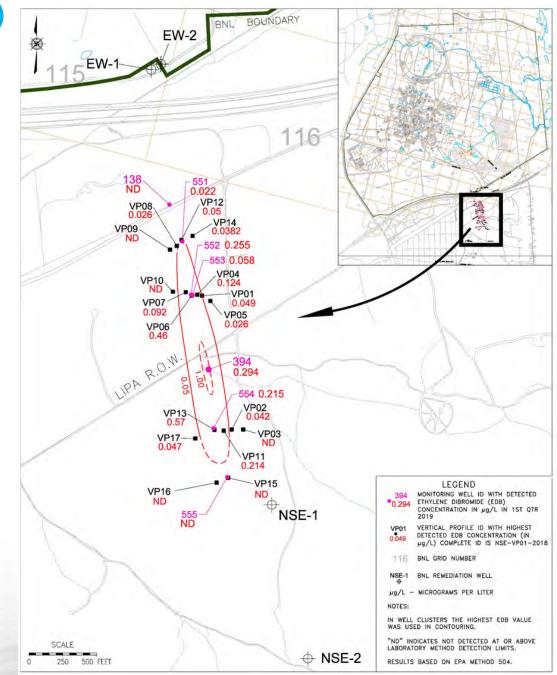
- As discussed during the CAC update (January 2019) modifications to the treatment system were necessary to meet the cleanup objectives.
 - Began system modification construction in June 2018
 - Completed installation and development of four new extraction wells, pipeline and utilities February 2019
 - Four new extraction wells began operation in March 2019
 - System operating as expected





North Street East (NSE) Ethylene Dibromide (EDB) Plume History

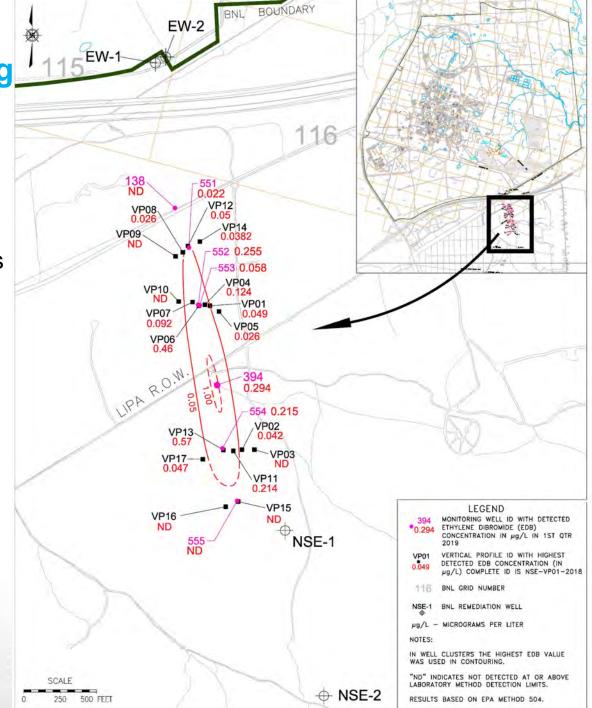
- VOC Treatment System was shut down in 2014 (capture goal met)
- Routine groundwater monitoring in August 2015 detected EDB in monitoring well 000-394 above the 0.05 ug/L groundwater standard (maximum concentration of 1.06 ug/L in 2017)
- EDB is deeper than the VOC plume and associated monitoring wells
- The plume is approximately 1500 feet long and 200 feet wide.
- 17 vertical profiles installed during 2017-2018 to characterize the EDB plume
- Five permanent monitoring wells were installed in November 2018 to monitor the plume





NSE EDB Groundwater Modeling

- Performed groundwater modeling simulations utilizing characterization data
- Groundwater modeling indicates that the two existing extraction wells (NSE-1 and NSE-2) will not capture the entire plume.
- Performed simulation of natural attenuation of plume





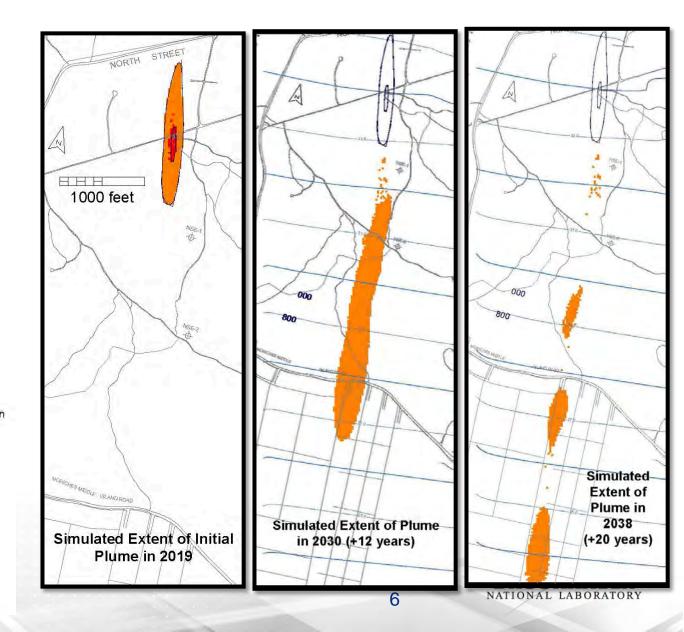
NSE EDB Plume – Natural Attenuation Modeling

- Natural attenuation simulation indicated that plume concentrations would not decrease to below the Groundwater Cleanup Goal (0.05 ug/L by 2030)
- Model shows concentrations above Cleanup Goal beyond 2048 and significant plume growth

1.25

1.00

0.50

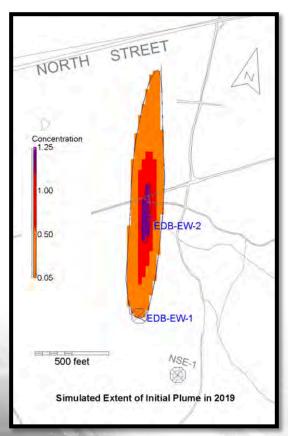


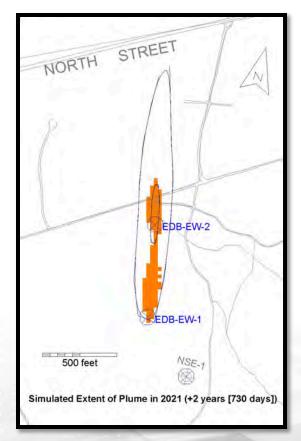


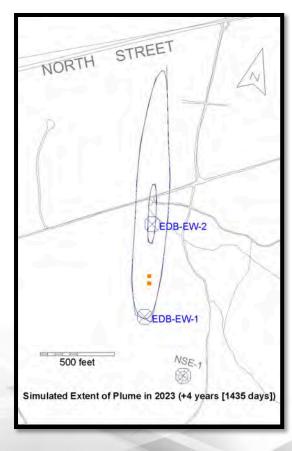
NSE EDB Plume - Pump and Treat Modeling

- Simulated plume with existing well NSE-1 turned on (Does not capture the entire plume)
- Simulated plume with one new extraction well (cleanup in 7 years by 2026 (7 years pumping and 3 years monitoring)
- Simulated plume with 2 new extraction wells (cleanup in 4 years by 2023 (4 years of pumping and 3 years monitoring)

Model simulation with two new extraction wells

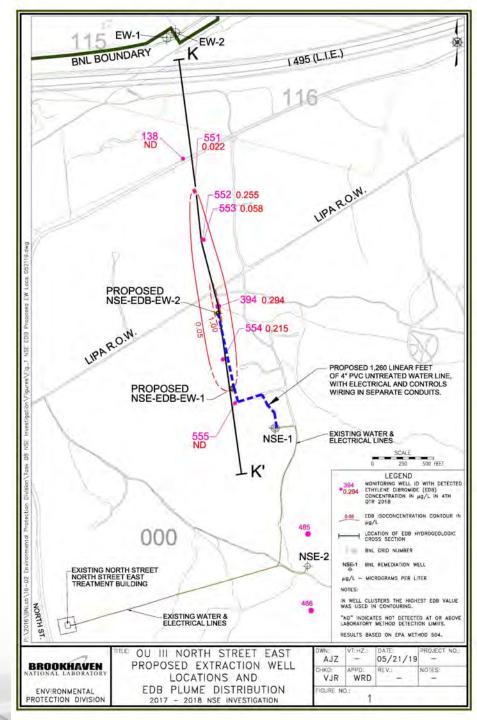






NSE EDB Summary

- Monitored Natural Attenuation (MNA) does not meet the ROD cleanup goals
- The selected alternative is a modification to the North Street East Treatment System (carbon system), utilizing two extraction wells
- Currently proceeding with system modification design
 - The design will provide details needed to construct modification
 - Met with property owners and received approval for construction





NSE EDB Path Forward

- Brief CAC
- Brief Central Pine Barrens Commission on planned work
- Complete design work (June 2019)
- Submit design modification to regulators (June/July 2019)
- Install extraction wells (Summer 2019)
- Complete construction in 2020





